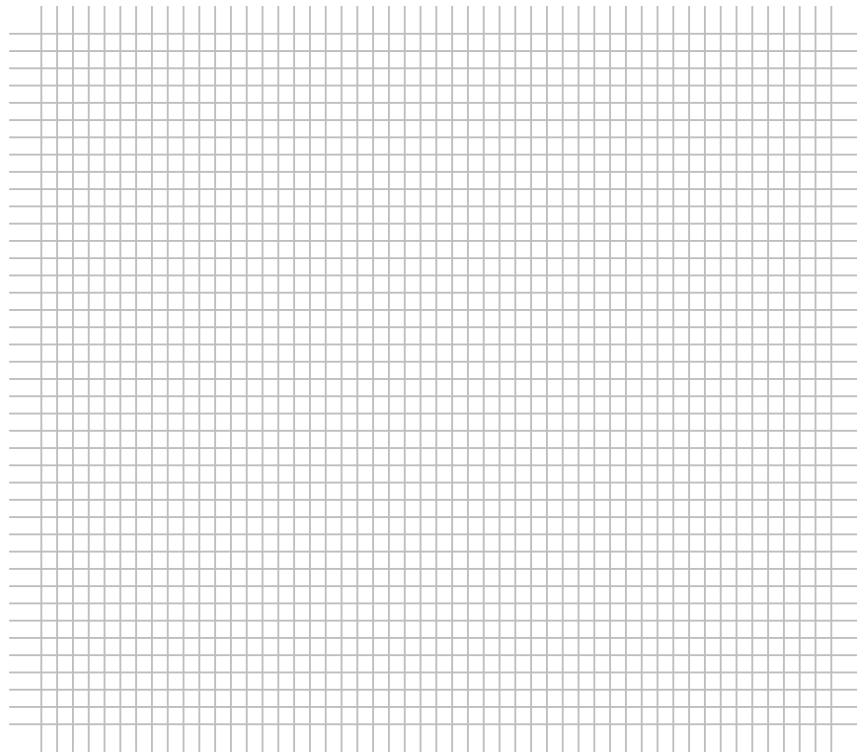


2. The wingspan of 58 tundra swans gave the following information:

Number of Storms	Number of Years
175–185	5
185–195	18
195–205	21
205–220	14

(a) (10 points) Sketch a histogram. Be sure to label the axes.



(b) (4 points) What percentage of the swans have a wingspan of less than 200 cm? (Use the histogram).

3. (10 points) A journalist plots the percentage of high-income people versus the percentage of foreign-born people in each state, giving a plot with 50 points. The correlation coefficient is 0.5. The journalist concludes that foreign-born people earn more, on average, than native-born people. Give TWO DIFFERENT mistakes that the researcher is making. Explain clearly.

4. In November 2008, unemployment rates for the 50 States followed the normal curve with an average of 6.1 and an SD of 1.5.

(a) (10 points) What percentage of the States had unemployment rates higher than 4.0?

(b) (10 points) If I tell you that Oklahoma was at the 20th percentile, what was the unemployment rate in Oklahoma?

(c) (3 points) Wyoming had the lowest unemployment rate, while Michigan had the highest. If these two states were removed from the list, would the SD for the remaining 48 states be smaller than 1.5, equal to 1.5, or larger than 1.5? (No explanation required).

(d) (3 points) Would the median unemployment rate be quite a bit smaller than 6.1, about equal to 6.1 or quite a bit larger than 6.1? (Remember, the histogram looks like the normal curve). (No explanation required).

5. The chest circumference and wingspan of 58 tundra swans have the following summary statistics:

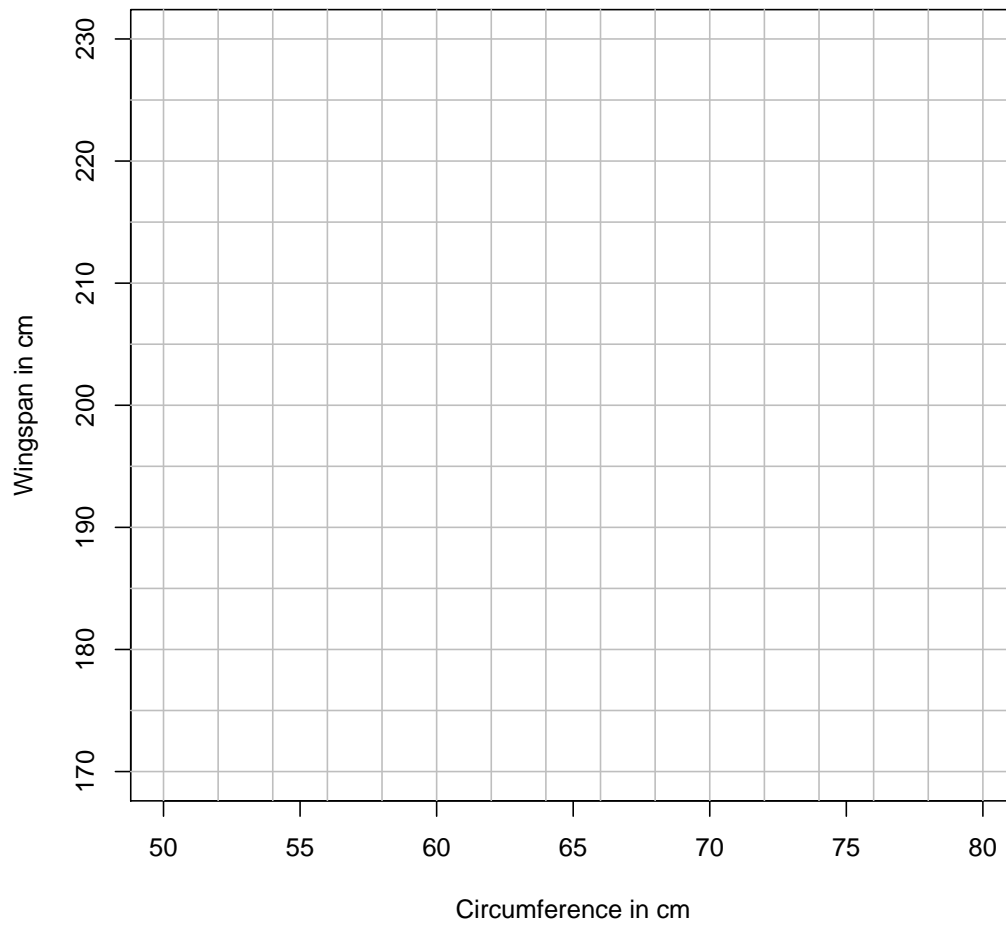
Circumference: average = 63.0 cm SD = 3.4 cm $r = 0.5$

Wingspan: average = 198.0 cm SD = 9.8 cm

The scatter-diagram is football-shaped.

- (a) (7 points) Find the regression equation for predicting wingspan from circumference.
- (b) (7 points) Estimate the wingspan of a tundra swan that is 58 cm in circumference.
- (c) (6 points) Would you be surprised if the swan from part (b) has a wingspan of 208 cm? Explain.

(d) (8 points) Sketch the scatter-diagram.



6. (10 points) A market researcher takes a sample of women aged 20 to 70 and finds a negative correlation between age and the number of movies seen per year. She concludes that as people age, they go to the movies less often. Is this necessarily true? If not, what could account for the negative correlation?

Please note that these are provided for your convenience, but it is your responsibility to know how and when to use them.

$$\text{height} = \frac{\text{percentage}}{\text{width}}$$

$$z = \frac{x - \text{ave}}{SD}$$

$$x = \text{ave} + z(SD)$$

$$\text{rms error} = \sqrt{1 - r^2}(SD_Y)$$

$$\text{slope} = r \left(\frac{SD_Y}{SD_X} \right)$$

$$\text{intercept} = \text{ave}_Y - (\text{slope})(\text{ave}_X)$$